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THE USE AND MISUSE OF STATISTICS IN SOCIAL WORK.*

By KATE HOLLADAY CLAGHORN.

The general theory underlying the use of the statistical method in social work is so plausible and attractive that few to-day would venture seriously to attack it. That every social condition is due to some cause or causes, that social remedies depend for their effectiveness on knowledge of causes, that this knowledge involves more or less investigation and examination are almost self-evident propositions, stated in this general way, and lead naturally to the employment of the statistical method as a form of research especially applicable where large numbers are to be dealt with, as in the case of social groups.

And so it happens that every phase of the growing interest in social conditions and social betterment is manifesting itself in the endeavor to produce its own appropriate form of social statistics.

Every matter on which legislation affecting social conditions is desired (and these are growing in number and extent day by day) is first referred for investigation, as a matter of course, to some committee or commission which, after laboring from six months to two years, produces its own bulky quota of columns and tables to be stacked away upon library shelves.

The official censuses, State and Federal, originally intended to be mere enumerations of the population, include, year by year, a wider range of facts bearing on social conditions.

Our great organizations of various kinds, public and private, dealing with the social group in its various subdivisions, as dependents, delinquents, defectives, and so on, are keeping more and more complete and careful records, to show not merely

* Read before the National Conference of Charities and Correction, Richmond, 1908.

administration efficiency, but also such facts as are thought likely to be of value in throwing light on the special problem involved in their work or even upon those of a more general nature.

And, finally, every settlement worker, every college boy and girl, filled with enthusiasm for "research" and "statistics," is roaming up and down the land, with open note-book and freshly sharpened pencil, to glean such precious spears of statistical fact as may have been passed over in the lumbering progress of the official machinery.

But, in this enthusiastic advance upon the shining fields of social research, how much have we looked behind, to note the value of the crop we have been gathering?

In some of the older lines of statistical inquiry the process of criticism has followed well after the progress of growth. In the methods of census investigations, in records of institutions, improvements are constantly being made that are constantly adding to the reliability and usefulness of the statistical results.

But outside of these boundaries, among the host of newcomers into the statistical field with a fresh idea for a statistical investigation for every day in the year, it seems as if the pre-occupation with each successive new scheme prevents any critical examination of those already brought to completion. These inquirers irresistibly remind one of fresh-air children on an outing, so entranced by the new riches before them that they grasp handful after handful, flowers and weeds together, only to drop them unregarded at the enticement of the next waving tuft of brightness.

There is, in particular, one branch of social inquiry in which there is especial activity at the present time and in which it seems there has been especially little taking account of what is really accomplished, and that is the investigation of the circumstances of the lives of the poor in their homes.

A favorite variety of this sort of investigation is that which concerns itself with the standards of living of families, as shown by the items of family income and expenditure or the family

budget. The difficulties of this kind of inquiry seem to be fairly well recognized in theory, but with apparently little effect in restricting the output in practice.

Every one to whom it would occur to make an attempt at statistical investigation at all is supposed to understand, as the very first principles of his work, that, in order to secure anything that may properly be termed "statistics," the matter dealt with must be capable of expression in quantitative terms, must consist of units that can be distinguished as like and unlike on some objective and verifiable basis, and that can be added, subtracted, and otherwise compared numerically. In the second place, information as to these quantities and relations must be accessible. In the third place, a sufficient amount of information must be gained to eliminate individual variations in the subject studied and errors of observation on the part of the investigator.

In social inquiry, generally, as compared with most other lines of research in which the statistical method is used, there is especial difficulty in meeting not merely one or two of these conditions, which might be counterbalanced by especially thorough compliance with the remaining one, but in meeting any and all of the three, owing to the number, obscurity, and complexity of the elements involved.

And this is especially the case in investigations of standard of living. Any one who has been behind the scenes of one of these investigations, and knows how the information is obtained, must indeed feel a sense of wonderment at its imposing array of columns, percentages, and averages which look so positive and convincing on the printed page.

In the first place, merely in arranging the concrete elements of the problem, the investigator has no end of difficulty in deciding upon the "units" that are to be counted. They must be distinct, they must always have the same meaning in the same investigation, and they must be significant. It is necessary to reduce all sorts and kinds of commodities to some common basis of kind and quality and price. The concrete articles of food must be divided into general classes and dis-

tributed by periods of consumption. Bare amounts paid for rental tell little unless something can be known of the accommodation secured. Clothing must be distributed by kinds and by periods of service,—a very difficult matter. The purchasing power of money ought to be taken into account, though it usually is not.

At last the schedule is planned, including many items the investigator has no direct or special use for at the time, but that he thinks are "interesting" and likely to throw unexpected light on the social problem when gathered, and now he goes forth to collect his information.

Difficulty number two is promptly met with,—that of the possibility of access to the information desired. He cannot, like the astronomer, make first-hand observation of his material which can be verified by other first-hand observers, but is obliged to accept the statements of other people—his very objects of study—who may be, and usually are, of differing degrees of intelligence, of willingness to tell the truth, and of differing personal bias which will lead some to underestimate some things and others to overstate them, and *vice versa*. They, in turn, are not giving information entirely at first hand, but must depend, more or less, upon memory for matters that puzzle anybody to recall definitely. And, finally, the investigator has to translate their concrete contributions of items into his "units," and present them in such shape and semblance of order as to afford ground for some definite conclusion about something large or small.

Now the third difficulty is encountered. Owing to the first two drawbacks, the scope of a budget investigation ought to be especially large to eliminate errors and give truly representative details. As a matter of fact, it is usually, on account of the time and labor necessary for its preparation, especially small. Data are usually gained for from one hundred to five hundred families,—a range entirely inadequate as a basis for conclusions.

In a recent investigation where it was frankly acknowledged that the number of families investigated (two hundred) was

too small to "furnish conclusive deductions for all workingmen's families," comparison was made with broader investigations to prove the general correctness of the one in question. It might be urged, however, that, where the small investigation is merely confirmed by the large one, it is unnecessary, and, where it is not confirmed, it is too small to allow us to determine whether it is showing new and typical phenomena or simply individual variations due to scarcity of examples.

Where it is found impossible (as it usually is) to make the complete enumeration of facts that would give the whole truth for a class, for workingmen in a given country, for instance, at a given period, or for a given income class, or race, or neighborhood, the investigator has to fall back upon a selection of examples that again works confusion.

In the investigation above referred to,* the two hundred families studied were found in one special neighborhood in New York City, but we are nowhere given definitely the principle of selection whereby, as the preface claims, "they were sorted out by a method as sound as could possibly be chosen," and consequently are unable to judge, except from the word of the investigator, whether the results of the investigation do or do not "give a comparatively true insight into the social, economic, and industrial life of a large class of workingmen's families in any city neighborhood of similar character."

As the actual group of two hundred families chosen included eight nationalities and eleven different sizes of family (ranging from two to twelve) with incomes ranging from \$200 to \$2,500 and occupations of great variety, including unskilled, skilled, and trading occupations, it is difficult to see how so small a group as a whole can be taken as a type, in all its diversity, of the "working" population as a whole, and still less how, even under proper classification and subdivision, to show the effect of variation in one condition at a time (as variation of income within one race-and size-of-family group, or variations of race within one income-and size-of-family group, or of size of families within the same income-and race-group), any

* More, "Wage-earners' Budgets," New York, 1907.

safe conclusion can be drawn from groups which in many cases are so small as to reduce to individual instances.

In the budget investigation just referred to, some attempt is made to so classify the material presented as to show income and expenditure according to the different elements involved, but we never succeed in getting only one variable at a time. If we have a classification showing variation in income-groups within one size-of-family group, the race elements are mingled indiscriminately, so that we cannot tell whether it is the grade of income reached (which is shown), or the different preponderance of different race elements in different income-groups (which is not shown where size-of-family and income-groups are compared) that is related to the expenditure.

In like manner, in another set of tables, the reader thinks he has arrived at some wise conclusion as to the effect of race traits on expenditure by comparison of different races within the same income-group, when he is suddenly brought to a standstill by observing that the different race-groups show different sizes of family, a circumstance which has its own separate effect on both the amount and the proportion of expenditure.

The inquiry into standards of living recently undertaken by the New York Conference of Charities and Correction avoided some of these defects by confining the investigation as nearly as possible to families of approximately the same size (which might be considered as the average type,—e.g., father, mother, and three children), and within a small range of income so selected as to bring the families within the lower levels of what was assumed to be "normal" subsistence.

But this investigation succeeded in securing for detailed study only two hundred and thirty schedules, covering three income classes and eight race-groups.

Realizing the difficulties of the undertaking, the cautious investigator of budgets will disclaim any attempt at elaborate generalization, and will even, with studied modesty, claim to make none, offering his study as merely a bit of social history to be used by some one else who may find it helpful.

But it is interesting to see that these very investigators

cannot, after all, refrain from generalization; and some of the attempts at interpretation are rather amusing. To take one more instance from More's "Workingman's Budgets," the deduction is made in the final summary that "thrift seems to be most marked in nations in which the preponderance of the income is from the husband," on the basis of one table giving percentage of income derived from the husband and another giving the average surplus in families where there was a surplus shown, both by nationalities.

It occurred to the present writer that the amount of income per person for the families of different races might have something to do with it, too. For instance, Norwegians stood at the head of the list as to amount of surplus and also per cent. of income from husbands. But the group, as a whole, consisted of four families of an average size of 3.5 and an average income of \$1,171.75. Such families ought to show a surplus as compared with a group where the average income is \$850 and the average size of family 6.0. It might be objected that these very facts are closely related to the percentage of income from the husband, this growing naturally less as one goes down in the scale of prosperity.

To test this and to see also if the generalization was justified, let us arrange the race-groups in the order, respectively, of average income per person, of average surplus where a surplus existed, and of percentage of income from the husband, also giving the number of families in each group, to indicate the weight to be attributed to the facts they show, on the basis of the tables given in the report.

<i>No. of families.</i>	<i>Order according to average income per person.</i>	<i>Order according to average surplus.</i>	<i>Order according to percentage of income from husband.</i>
4	Norway and Sweden.	Norway and Sweden.	Norway and Sweden.
17	Germany.	Germany.	Switzerland.
2	Switzerland.	United States.	Austria.
15	England.	Italy.	France.
105	United States.	England.	United States.
4	France.	Switzerland.	England.
35	Ireland.	Ireland.	Italy.
15	Italy.	France.	Germany.
1	Austria.	—	Ireland.
1	Cuba.	—	Scotland.
1	Scotland.	—	Cuba.

Comparison of the middle column with the right and left hand columns, respectively, will indicate which generalization was the better founded. It should be recalled that irregularity in the correspondence between order according to average income and order according to surplus may be allowed, as indicating thrift as a purely race trait, aside from income; and the chief irregularities are explicable on that basis, notably for Italy, which has a race reputation for thrift.

In the right-hand pair of columns, however, the hypothesis on which they are founded leaves no room for irregularity in order. As a matter of fact, the correspondence fails after the very first item. Omitting race-groups where the number of families is less than four helps matters somewhat; but even then the correspondence is not close, failing notably for the Germans and French.

But, after all, what is the value of these studies without some generalization? What is looked for in these inquiries into standards of living is something beyond mere bits of social history. The chief inducement for taking up social research is to get some light on social causation or, at least, social tendency; and, in particular, circumstances of life should be related to the well-being of the family. It is not enough to get bare items of income and expenditure. We want to translate them into terms of well-being. This task may be approached in various ways.

The mere fact of survival on a given income is a test of the minimum degree of well-being, or, rather, one should say, of a certain degree; for it may be questioned whether those persons who are actually wiped out by death are of as much concern to society at large as those who drag their lives along through various stages of physical and moral disability.

That a family can barely survive on \$500 a year can be learned in a simpler fashion than by a budget inquiry; what we really want to know is what grade of well-being that amount can secure, and under what conditions.

Certain approaches to this problem may be made statistically. For instance, we can reduce the amount of money spent

for food into its main kinds, with the amount of each. Then we can, by analysis, determine the general nutritive value of this food per person, per day.

This additional step was wisely taken in the investigation by the New York Conference. But they were unable to determine the amount actually consumed, which would be the next stage of approach to the question of well-being. This, of course, could be determined statistically, though it would not be easy to do so.

But for the next stage we should know what effectiveness is given to food by its preparation, which depends upon different degrees of ability in the housewife; then how the individual members are able to make use of it, which depends upon various idiosyncrasies, involving the uncalculated forces of heredity as shown in race differences, inherited constitution, etc.; and, finally, the degree of well-being reached by its use.

To these questions the statistical method to date does not give reliable answers, and perhaps never will; but the want of them vitiates the whole process of budget investigation to a great degree.

The skill of the housewife, which no way has been found as yet to measure statistically, is as important an element in the problem as any of those that can be so measured. And this is true not merely in the preparation of food, but in the direction of all expenditure. How are we to get track of this? Most investigators agree on the great importance to be ascribed to this element, but can only give information about it in general terms. It does little good to be told (as in one instance) that "what is done with the weekly income and the amount of comfort it yields depends almost entirely upon her [the housewife's] character and ability," when the statistical tables from which inferences are to be drawn are made up entirely without classification of this most important variable, and when we are unable to deduce it from the items themselves. For it is obviously incorrect to assume that good management is proved in families in low income grades if they survive, or in higher grades, if they show a surplus of income over expenditure at the end of the year.

A more sensible test would be that of the grade of well-being of the family, which is also wanted for its own sake, as the final end of a budget investigation. But that, too, is difficult, if not impossible, to get statistically. It is not necessary to adduce elaborate proof of this point. Let any one who doubts the difficulty set to work to draw up a schedule to show degrees of physical well-being, and then consider how the information is to be secured and how accurate it is likely to be.

Or, to save labor, let him consult the Report of the New York Committee on Physical Welfare of School-children,* which did attempt to connect circumstances of life with well-being by the statistical method, and see what results are obtained.

That committee, reversing the process of the budget investigator, took a grade of well-being as its starting-point, and attempted to trace back to the circumstances of home life which might have caused it. Fourteen hundred school-children in the kindergarten and first two grammar grades, of different nationalities, from schools in all parts of the city, who were found by the school physicians to have defects of vision, hearing, breathing, teeth, and nourishment, were taken as the basis of the investigation, which consisted of inquiry into their home conditions "in order," the report states, "to ascertain whether their need arises from deficient income or from other causes."

At the very outset the test of "well-being" is seen to be a most uncertain one. While, at first glance, the idea that two-thirds of the city's school-children are physically "defective" is a startling one, it depends, after all, upon the kind and degree of the defects how serious the condition is. The kinds of defects included in the class investigated by the committee are precisely those in which the degree of importance may vary most widely and is likely to be differently judged by different examiners.

The main items of defect shown in the fourteen hundred children studied were malnutrition, enlarged glands, eye defects, nose defects, throat defects. The largest single item was for "bad teeth," which was present in 74.9 per cent. of the

* Report on Physical Welfare of School-children. Pub. Am. Stat. Assn., June, 1907.

fourteen hundred children. This is obviously a defect as to the significance of which there may be great difference of opinion. Those who hold that it is of especial importance in its bearing on malnutrition and other defects will not get much support from the relation of defects shown in this report, as, in the 145 cases of malnutrition found among the 1,400 children (only 10.4 of all), only 73.1 were reported as having bad teeth; while the remainder not afflicted with malnutrition showed 75.1 with bad teeth. In fact, 291 of the children (21 per cent. of the 1,400) had no defects *but* bad teeth. Suppose we decided that "bad teeth," unaccompanied by any other defect, was not a very alarming condition, and subtracted the number showing that defect only from the defective class. Doing this and assuming that the 1,400 children with defects showed the ratio to children without defects given by the school authorities as 2 to 1, it is found that the proportion of "defective" children in the school population would drop to 53 per cent., which is quite a different story from $66\frac{2}{3}$ per cent.

In like manner the other items could be varied and the percentages changed. That there is a grave possibility of change in degree of defects, due to differences in examination, is more than hinted at in the report, where a comparison is made between the percentage of defects shown in the first examination of 1,400 children in October and in a re-examination of 990 of the same children in the following March and April. The remaining 410 had moved away,—a selection of sufficiently random character not to affect the proportions, which were as follows:—

	<i>First examination, per cent. of 1,400 children.</i>	<i>Second examination, per cent. of 990 children.</i>
Malnutrition	10.4	12.9
Enlarged glands	45.5	70.2
Bad teeth	74.9	79.2
Eye defects	14.9	17.4
Nose defects.	28.2	47.1
Throat defects	30.9	45.6

"Almost to a child," says the report, "conditions were found to be more serious in April than were recorded in the preceding October, November, and December." But "no one knows,"

the report continues, "whether these changes are due to actual deterioration or to the probability that a school physician, re-examining specially selected children, would be more thorough than when making original examinations. No allusion is here made to seasonal change, but this also would have to be taken into account."

Whatever the reason, it would seem that percentages which could vary so widely as from 45 to 70 for "enlarged glands," from 28 to 47 for nose defects, and from 30 to 45 for throat defects in six months, would be of little value either to show prevalence of defects or to make a basis for showing their causes.

As a matter of fact, the results of this research were mostly negative, as practically admitted by the committee themselves, due, however, not merely to the indeterminate character of the class taken for investigation, but to serious defects in method, which could, it seems, quite well have been avoided.

In the investigation of home conditions a large number of questions was asked, covering race, time of residence in New York State, in the city, income, occupation, members of the family working, kind and number of rooms occupied, rent paid, character of meals eaten by the child in question and his hours of sleep, disease and death record of the family, with record of circumstances accompanying the birth and infancy of the child, and many other matters.

The material thus obtained was embodied in thirty-eight tables of great length and detail, in comment upon nearly every one of which, one after another, the report itself states that the particular circumstance there tabulated did not seem to account for the defects.

This is not surprising when it is seen that not one of these tables gives comparisons with the same set of conditions for the school-child without defects, to see whether the circumstances shown are in a differing proportion for the defective child, and consequently may be presumed to have some relation to the defects.

In only four of the thirty-eight tables are the different defects tabulated separately. Of the remaining thirty-four,

twenty-two give classifications of circumstances of home life by race, nine by income, and three by both race and income for the class of defectives as a whole.

If this were a study of race traits and habits or of variations in manner of life characteristic of various income-groups, the tables would be to the purpose. But, after uniting heterogeneous defects in one arbitrary class and failing to give any standard of comparison with the normal child, in what possible way can the diseases and mortality of fathers and mothers, number of children born, mortality and diseases of children, housing conditions, income, etc., be shown to have relation to the defects given?

The nearest approach to a positive result is obtained from a couple of tables where malnutrition is tabulated separately and compared with the other defects, for several circumstances, income among them. Here we have some indication of circumstances that are presumably related to this one defect; but how much more light would have been thrown on even this one question, had the basis of comparison been, not children with other defects, but the average child, or, even more significant, the child without defects.

This lack could have been easily supplied for all the tables, and the value of the report increased tenfold, by making a parallel investigation of home conditions for seven hundred families in which the school-children showed no defects; that is, the remaining one-third, which is said to be the proportion of those without defects among New York City school-children.

Such an investigation, after all, is but a crude method of finding the causes of physical defects. Each defect may be the result of one of many coexisting circumstances or of any variety of combination of these circumstances; and each may in its turn interact with any of the others in a way that requires the utmost patience and nicety of physiological research to disentangle, taking up one defect at a time and one supposed cause at a time. Perhaps as long as this is the case it would be advisable for the lay investigator to leave such questions for the medical profession to solve.

Are the results gained in such inquiries undertaken under such difficulties as these worth the time and money spent on them? The most that budget investigations have determined, even if we assume them to be accurate, is that *some* people *can* live on a certain amount of money at a given time and place; but they seldom afford a guide as to what other people *can* or *ought* to do. The budget inquiry of the New York Conference was undertaken with the eminently practical purpose of throwing some light on the question of adequate relief, by showing how much money we ought to assume would be sufficient for a family to live on in a fairly normal way.

The conclusion drawn, however, is from an average based upon different race-groups, each of which presumably differs from the others in respect to the fundamental necessities of normal living. For this purpose, indeed, the statistical method is especially weak, for it is a characteristic of the average not to fit individual cases.

The discrepancies shown in the different estimates that have been made of the minimum living wage indicate the difficulties of getting at the standard of living by means of statistics. And this, quite leaving out of the question the variation in purchasing power of money between one period and another and one locality and another, which of itself introduces an element of uncertainty so great that as a guide to practice a budget investigation is out of date about as soon as completed, and inapplicable besides to other communities than that for which it was taken.

Are there, besides the lack of results, certain possibilities of actual harm in the present wholesale recourse to this form of inquiry? It always does harm to give out misinformation in the guise of information, and matter presented in the form of long columns of figures has in itself a convincing look. People in general will not criticise or even read statistical matter, but they are, notwithstanding the numerous jokes about statisticians and liars, tremendously impressed by it. This is what makes the irresistible tendency of the investigator to generalize on insufficient basis so dangerous.

The general public will, without question, swallow almost any positive statement, accompanied by figures, without stopping for one moment to see whether there is any connection between the two or not. This is particularly mischievous when the public thus impressed is some legislative body, for we know that even they do not always give the "statistics" submitted to them a thorough critical examination, and that they, to a greater extent than the general public, are able to carry out their mistaken ideas in action which affects the entire community.

There is another possibility of harm of which it is perhaps old-fashioned to speak, and that is the effect on the families themselves of having their lives and intimate family circumstances investigated. These inquiries are in the main carried on, not merely from pure scientific interest, but for some purpose of social betterment; and it is not so very long ago that persons with such purposes were warned over and over again by their guides and advisers of the dangers of invading the privacy of the home and the necessity of keeping strictly within the limits of confidence, kindness, and personal relation in the work of investigation, which was to be tolerated only in so far as it was a necessary means for securing the benefit of the family itself.

The newer tendency in social work to regard outer circumstances of environment—such as food, housing, etc.—as the mainly determining factors in social conditions is for the time leading us to overlook the no less important side,—that of individual character, the force that reacts against environment and develops by laws of its own from within as well as those laid upon it from outside.

If, then, in our attempt to get at outer conditions we hurt or injure this delicate root of the inner life, are we not doing a very great and real harm? Self-respect is the foundation of character, and self-respect is accompanied by an instinct for privacy, which we should not only refrain from breaking down where it exists, but should try our best to build up where it does not exist.

If we, as housing reformers, insist upon separate entrances to bedrooms, so that different members of the same family shall not intrude on each other, shall we, as statisticians and strangers, ourselves break open those doors and with pencil and note-book in hand extract the most intimate details of the family life for public presentation?

The old-fashioned treatises on ethics taught us that the most immoral procedure possible toward our fellow-man was to treat him as a "thing," not a person. It would be very unfortunate, it seems to me, if, in our zeal for investigation, we conveyed the impression to the poor that they were "things" to be weighed, measured, and ticketed.

They have enough to bear. Let us at least spare them that, except where we are very sure that some very great benefit to them and to society at large will result from it. If the statistical mind needs exercise, it can easily get it in some more innocent way; and, if our college professors must provide their students with so-called "laboratory work" in social research, let it be among the well-to-do whose lives also might furnish statistics of an interesting nature and who are now showing such an interest in social investigation that they ought to be pleased to furnish the material for investigation as well as the funds.

To improve the conditions at present prevailing in social research, several measures can be taken.

In the first place, we should break off the habit of referring every question to statistical investigation as a matter of course. We should in the first place determine whether it is not sufficiently plain in its obvious aspects, so as to avoid resorting to a laborious process of proof of something quite well known before. Then it should be made quite certain that the matter in question is susceptible of statistical treatment. Then, whether the results will be worth the time and money spent in getting them. The student of social matters may ask questions enough in half a day, all of more or less interest and all abstractly capable of solution by statistics, but of such a nature as to keep an army of investigators busy for years.

If a question is handed over for statistical treatment, sufficient time and money should be allowed to make the results worth while. One great difficulty at present with statistical studies is that so many are of such small scope and not comparable with each other. Investigators seem to think that, by acknowledging that the extent of their investigations is inadequate, they have thereby obviated the difficulty. But they have not, so long as they continue to publish these investigations, nevertheless, and to draw conclusions from them.

What would perhaps be as wholesome a remedy as any for inadequate statistical work would be for those undertaking it to cultivate the old-fashioned moral virtue of self-denial. It is to be suspected that many an investigation is published just because the investigator has got the material together, and, although he knows it is inadequate, dislikes to waste it, or because some committee has paid him to produce results, and he wants them to feel that they are getting their money's worth. This idea itself should be combatted not merely for the sake of getting better statistics, but for the education of the public. It has been recognized as the duty of the statistician to urge the value and necessity of adequate and proper statistics; but it is quite as important and necessary a task—perhaps more so, at the present juncture—to stand firmly against the production of what is useless and misleading, and to make plain that the money appropriated for an investigation is better spent when the results are withheld if they prove to be negative or valueless than if they are “saved” by being published.

It is obvious that there is need of a better technique in the presentation of social statistics. There is no excuse for slovenly tables that even the expert must take a week to study out and that the ordinary reader can make nothing of except what the investigator gives him in his “deductions.” This is entirely unnecessary. In almost every matter dealt with in social research the material can be so arranged and explained that the average man may and should find it illuminating and instructive.

One reason for this lack of clearness in presentation is the

fact that so many untrained persons are engaged in this work. When an investigation is undertaken, the workers are gathered from hither and yon, as best they may be, some with one qualification, some with another, including some who seem to think it an interesting trait that they "don't like mathematics" and that they "always did hate to add."

It is, of course, possible to make use of untrained assistants under competent supervision; but I regret to say that even the directors of investigations are not always as careful in their own statistical methods as they might be, and do not always give really conscientious, careful supervision to their workers. Many an investigation is carried on and the results published under the guarantee of some statistical authority of weight or some committee of experts, in which the inexperienced and often untrained investigator is left very much to his own devices to form his own plan, frame his own tables, and draw his own conclusions without that careful, critical examination on the part of his chief which is his due.

Finally there is need for the development of new technical methods suitable for social research. The mathematical experts, with their elaborate formulæ, are as a rule not sufficiently interested in social questions, nor do the methods worked out for other sciences apply to most of the questions the social investigator wants to study.

The social scientist, on the other hand, is apt to be deficient in the mathematical sense as to where numbers apply and where they do not. What is needed is a new variety of expert, one who has at the same time the sense of numbers and the sense of social values. Let us hope that, by dint of each one doing his little best at the task of improving methods, a fitting type of method and of investigator will finally appear.